BT-EE

Comments on the CMA's Provisional Findings on wholesale mobile services

[non-confidential version]

Prepared for

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EXECUTIVE SUMMARY

1. CRA has been asked by Sky to provide an economic assessment of the CMA's provisional conclusions regarding the impact of the BT-EE proposed merger on competition in wholesale mobile services set out in its Provisional Findings Report ("PFs").[1] This report evaluates the analysis set out in the PFs and explains why, contrary to the conclusion of the PFs, the merger is likely to substantially lessen competition in the provision of wholesale mobile access.

2. It is notable that two Members of the CMA panel disagree with the provisional finding that the merger would result in no substantial lessening of competition ("SLC") in wholesale mobile services. We agree with the dissenting Members that the merged entity would have the incentive to harm fixed-MVNOs, either by refusing to supply them or through some form of partial foreclosure strategy.

3. The analysis in the PFs is framed in terms of vertical (input) foreclosure. The concern is that, post-merger, the merged entity would withdraw or worsen the terms of access to its mobile network offered to MVNOs which themselves have a fixed broadband operation ("fixed-MVNOs") and compete with the merged entity in offering retail bundles of fixed and mobile services. Complete withdrawal of wholesale mobile services from (some or all) fixed-MVNOs is termed "total foreclosure", while continuing to supply but worsening the terms of supply as regards price and/or quality is called "partial foreclosure".

4. The analysis in the PFs focuses on total foreclosure as the central case, dismissing partial foreclosure with the claim that, because total foreclosure is the strategy that would cause most harm to fixed-MVNOs, it is therefore the one most likely to be adopted by BT-EE. In this report, we explain why dismissing partial foreclosure and focusing on total foreclosure in this way is inappropriate, and highlight several flaws in the analysis of total foreclosure set out in the PFs.

5. As a starting point, it is clear that by bringing together two complementary (and large) revenue streams in fixed and mobile services, the merger affects EE's incentives to supply wholesale mobile services to fixed-MVNOs. Pre-merger, EE would optimally set access terms so as to balance its wholesale margin from providing MVNO access against the retail margin it could have made by serving the retail customer itself. Post-merger, BT's retail margin from fixed services sold to mobile service customers is added to the downstream retail margin in this calculation. Thus, after the merger, BT-EE will balance the margin they can earn from wholesale mobile services against the larger *combined* retail margin they could make by selling *both* fixed and mobile service to a retail customer, generating an incentive for BT-EE to bid less aggressively for MVNO contracts.

1 CMA, *Anticipated acquisition by BT Group plc of EE limited. Provisional findings report*, 28 October 2015 ("PFs"). The analysis of the impact of the merger on the supply of wholesale mobile services is presented in Sections 13 and 14 and Appendices I and J of the PFs.

6. Essentially this is a "raising rivals' costs" strategy, in which the integrated operator uses its control of an upstream input to raise the cost of operation for its retail rival. Total foreclosure is the most extreme, i.e. limiting, case of this strategy in which the merged entity's benefit from disadvantaging the fixed-MVNO in the retail market exceeds the potential gain from wholesale mobile revenues at any level of the wholesale price. However, even if total foreclosure were not profitable, it does not follow from this that a less extreme, partial foreclosure strategy is necessarily unprofitable; indeed, the less extreme approach has a *greater* likelihood of being worthwhile for the merged entity. Hence it is important to assess partial foreclosure properly in its own terms.

7. Moreover, the analysis of total foreclosure set out in the PFs contains a number of flaws. The conclusion that BT-EE would lack the ability to foreclose MVNOs is based on a mischaracterisation of the wholesale access procurement process and MNOs' information about their rivals' participation and bidding strategies. The PFs also make unwarranted inferences from observed pre-merger bids, failing to recognise that these cannot inform an assessment of post-merger bids.

8. To assess the merged entity's incentive to engage in total foreclosure, the PFs follow BT's advisers Compass Lexecon in relying on a vertical arithmetic ("VA") approach to estimate a "critical cost increase". This is the minimum increase in wholesale access prices that would make total refusal to supply profitable, keeping the merged entity's retail prices fixed at the pre-merger level. Based on various (largely arbitrary and often extreme) assumptions about pass-through, elasticities of MVNOs' demands, and diversion ratios to the merged entity, the PFs estimate a range of values for the critical cost increase and, without any assessment of the actual costs increase that would follow a foreclosure strategy, reject the possibility of total foreclosure.

9. However, a VA approach is designed to consider the case of a monopolist upstream supplier, which is not the situation here. By construction it is incapable of taking account of the *response* of other MNOs to BT-EE's refusal to supply. The analysis in the PFs seeks to patch up this problem somewhat by making qualitative assumptions about various aspects of competitors' behaviour, but the consequence is that the analysis is entirely beholden to assumptions without any solid evidentiary basis. As a result, the conclusions drawn in the PFs about the risk of foreclosure are not reliable.

10. The analysis in the PFs relies heavily on the existence (at least at present) of three other potential MNO suppliers of wholesale mobile services in addition to BT-EE, who are willing to supply access on competitive terms. Yet the analysis fails to appreciate how the change in BT-EE's incentives towards wholesale mobile access will induce the other MNOs also to worsen their terms of access. The PFs should have examined BT-EE's incentive to raise rivals' costs taking into account the reactions of rivals, using an equilibrium analysis, and quantified the scale of these competitive responses. However, they fail to do so.

11. We therefore share the concerns of the dissenting Members of the panel who disagreed with the conclusions of the PFs on both total foreclosure and partial foreclosure. We urge the CMA to re-evaluate the theory of harm concerning wholesale mobile competition and place it on firmer ground.

1. INTRODUCTION AND OVERVIEW

12. At the request of Sky, this paper provides an economic assessment of the CMA's preliminary conclusions in the Provisional Findings ("PFs"): that the proposed acquisition of EE by BT does not create a substantial lessening of competition ("SLC") in the supply of wholesale mobile services.

13. The PFs provisionally conclude that the transaction will not lead to significant worsening of the conditions of access for MVNOs (especially fixed-MVNOs, i.e. MVNOs operating a fixed network) to the MNO networks they need in order to provide a mobile service. Notably, this conclusion has not been reached unanimously by the panel and the PFs report that two Members dissented from the conclusion that no SLC was being created, essentially on two main grounds:

- First, there is a significant probability that the merged entity would have the incentive to engage in partial foreclosure and harm fixed-MVNOs "*by **restricting the range and quality** of services offered*".[2] It would also not want to "*assist major competitors by giving them access to a **high-quality mobile service***"[3] (emphasis added), rather than refuse to grant them access altogether.
- Second, they considered that any foreclosure strategy, either partial or total, could materially affect competition in the wholesale mobile market, as the remaining MNOs may not neutralise the impact of the merger by "*offering better terms either out of a desire to play a part in fixed-mobile bundling or in any event*".[4] As a result, it was likely that "*EE's total or partial withdrawal [would] lead to higher prices and/or reduced quality in MVNO contracts*",[5] with adverse effects downstream.

14. In this paper, we explain why the analysis laid out in the PFs is in fact not robust as a matter of economic analysis, and concur with the concerns expressed by the dissenting Members that the transaction will create material concerns in the supply of wholesale mobile services.

15. At a high level, the conclusions reached in the PF rely essentially on three main pillars:

- A framing of the potential concern in terms of "total" vs. "partial" foreclosure of MVNO access seekers on the part of BT-EE; and then a ranking of these two options that focuses on total foreclosure as the dominant strategy for BT-EE, because it would be more effective and cause greater harm to the MVNO access seeker. As a result, the formal analysis in the PFs majors on the potential for the parties to refuse to supply wholesale mobile services altogether ("total foreclosure"), while the possibility of setting higher prices or worsening the quality of services ("partial foreclosure") is deemed a less credible strategy and dealt with more briefly and entirely informally.

2 PFs, para. 14.278.

3 *Ibidem*.

4 PFs, para. 14.279.

5 *Ibidem*.

- A judgement that, while the emergence of fixed-mobile bundles in the UK market could materially change the merging parties' incentives to provide wholesale mobile services to fixed-MVNOs, it is highly uncertain whether bundles will turn out to be important enough to materially affect BT-EE's incentives when setting access terms, and therefore it would be premature to express concerns on this basis; and
- A judgement that the propensity of other MNOs in the UK to offer deals to fixed-MVNOs will remain unchanged following the transaction. As a result, there will always remain sufficient alternatives for the access seeker to preserve favourable terms.

16. Each of these building blocks is highly questionable as a matter of logic and economic analysis, and we concur with the concerns of the dissenting Members.

17. First, the framing of the potential concern in terms of total vs partial foreclosure, and the focus on total foreclosure as the primary concern because it is the strategy that causes the greatest harm to a fixed-MVNO player, are peculiar as a matter of economic analysis. As with any merger involving complements as well as substitutes, the primary question to be explored is how the trade-off between the cost and benefit of restricting output is modified. In combining complementary revenue streams in fixed and mobile, the transaction directly changes the trade-off for EE between the wholesale mobile margin earned from the MVNO, and a combined mobile/fixed margin that could be earned instead if BT-EE managed to divert the customer of the MVNO to itself. As the relative costs and benefits of providing MVNO access change, the transaction has then the potential to change the *terms* at which the merged entity will be willing to offer access relative to the stand-alone EE – with total foreclosure being only the extreme (limiting) case of that possibility.

18. We therefore entirely agree with the dissenting Members that partial foreclosure (intended as the worsening of terms to fixed-MVNOs) is not something that can be dealt with just as a secondary variant of the main concern, but is in fact the most obvious and natural concern in the circumstances, and requires rigorous assessment as a standalone concern. Instead, the PFs despatch the possibility that fixed-MVNOs might face worse terms at the time of contract renewal on the basis that if the intention was to harm the fixed-MVNO, full foreclosure would be more effective; and proceed to discuss partial foreclosure only in terms of degrading the quality of service for Virgin Media under its existing contract with EE – a possibility which is also excluded after a brief informal discussion.

19. Secondly, while the magnitude of the concern does depend *inter alia* on the future development of bundled offers in the UK, which the PFs qualify as uncertain, the ability to offer bundles is a strongly stated rationale for the deal for BT. While the speed of growth in demand for joint purchases of fixed and mobile services in the UK market is not known, it seems highly likely that this trend will develop here as in most of the rest of Europe – and that the transaction will accelerate it.

20. Thirdly, the conclusion that the conduct of other MNOs will essentially not change in terms of their MVNO offers after the BT-EE deal relies on entirely implausible assumptions on the way the negotiations between a MVNO and a host work, the rationality of participants, and the functioning of bidding/auction markets. The PFs' conclusion *de facto* relies on the possibility that the presence of two MNOs is effectively

enough to guarantee a good deal to a MVNO access seeker. This relies on very strong assumptions about the mode of competition, namely that MNOs are perfectly interchangeable from the point of view of the fixed-MVNO. Such assumptions do not reflect the reality of the marketplace.

21. The provisional conclusion that the merger creates no SLC is thus not robust as a matter of economic analysis and logic. The premise that the main issue must be total foreclosure, because any more moderate strategy of worsening access terms for rival fixed-MVNOs would be less profitable for BT-EE, is not correct. The analysis of the incentives and ability to engage in total foreclosure is itself flawed. Moreover, claims to the effect that other MNOs will essentially carry on as before, and that this is enough for competitive pricing, are also untenable as a matter of economic analysis. Our concerns mirror the reservations expressed by the dissenting Members in paragraphs 14.278 and 14.279 of the PFs. As a result, we would urge the CMA to re-evaluate this theory of harm.

22. The structure of this paper is as follows. Section 2 explains why the framing of analysis in the PFs (drawing a distinction between total and partial foreclosure and then focusing mostly on total foreclosure) is inappropriate, and sets out the relevant analysis for the way that the transaction changes the relevant trade-offs for EE under BT's ownership. Section 3 explains that the assumptions underpinning the analysis of total foreclosure in the PFs are highly questionable even within the limitations of that framework. Section 4 discusses flaws and gaps in the analysis of the likely response of other MNOs, and in particular the conclusion that they will continue to bid aggressively "as before" for MVNO contracts. Section 5 concludes.

2. FRAMING THE ANALYSIS OF THE EFFECTS OF THE PROPOSED TRANSACTION

2.1. The PFs' approach

23. The PFs consider whether the proposed transaction will undermine the ability of fixed-MVNOs to procure wholesale mobile services from MNOs, and thus impair their ability to compete in the retail market. The PFs frame the analysis in terms of *input foreclosure,* and assess two potential foreclosure strategies that might be adopted by BT-EE:

- *"total foreclosure"*, whereby BT-EE would refuse to grant access altogether to their mobile network to (some or all) fixed-MVNOs;[6] and
- *"partial foreclosure"*, whereby BT-EE would offer access but on (price or quality) terms which are worse than those that would prevail absent the merger,

6 PFs, para 14.6.

either when bidding for new contracts or within an existing contract[7] (its current contract with Virgin Media or future contracts that it may enter into).[8]

24. While the use of a vertical foreclosure framework is standard for a deal that brings together complementary inputs into fixed/mobile bundles, the analysis in the PFs is unsatisfactory and its conclusions are not robust. The PFs focus mostly on the possibility of *total foreclosure* and concludes that the merged entity will have neither the ability nor the incentives to engage in such conduct; then they deal with partial foreclosure only as a "variant" of this main concern, and dismiss this possibility based on various comparisons with total foreclosure. The approach is puzzling because the most natural concern in the circumstances of this case is whether the merger will create incentives for BT-EE to *raise rivals' costs* – i.e. raise the cost of wholesale access (or lowering quality of service) to fixed-MVNO rivals – with the possibility of them refusing to make offers *altogether* only as the limiting case.

25. Focusing on *total foreclosure* first, the PFs conclude that BT-EE will not have the *ability* to engage in the strategy because even if it withdrew from bidding for a MVNO contract, other MNOs would be spurred on to bid competitively – especially MNOs without a strong fixed offering, responding to pressure from the fixed-mobile bundles provided by BT-EE.[9] The PFs conclude that BT-EE will also have no *incentive* to pursue the strategy because the key necessary conditions for this to happen (fixed-mobile bundles becoming prevalent; mobile services becoming a major driver of customers' choice of fixed service provider; and the merged parties recapturing a high proportion of the customers lost by the fixed-MVNO following the foreclosure strategy) are deemed unlikely to materialise. The PFs then briefly dismiss the potential for *partial foreclosure,* i.e. a scenario in which BT-EE would bid less aggressively for new or renewed MVNO contracts, on the grounds that they could cause more harm to fixed-MVNOs by refusing to supply altogether rather than by bidding weakly, and therefore this is a less likely strategy.[10]

26. As we explain below, this framing of the analysis and ranking of the concerns is unusual and the conclusions are not robust. We concur with the dissenting Members that, contrary to the analysis in the PFs, EE's total or partial withdrawal would lead to higher

7 *Ibidem*.

8 PFs, para 14.9. Note that the terminology used in the PFs differs from the one more common in the economics literature where "total foreclosure" refers to forcing a rival out of the market, while "partial foreclosure" refers to weakening a rival operating in the market (which is what the PFs consider).

9 PFs, para. 14.118.

10 Strictly speaking the PFs consider three forms of *partial foreclosure:* (i) bidding for new / renewed MVNO contracts, but less aggressively than it would have done absent the merger; (ii) foreclosing Virgin Media under its current contract with EE; and (iii) foreclosing fixed-MVNOs within contracts that EE may enter into in the future. Option (i) is dismissed on the grounds that BT-EE could cause more harm to fixed-MVNOs by refusing to supply altogether, rather than bidding weakly (paras. 14.192-14.194); (ii) on grounds including reputational effects, market circumstances and a low likelihood that downstream competition could be affected (paras. 14.263-14.265); and (iii) on the grounds that fixed-MVNOs would consider the merged entity's possible incentives and seek greater contractual protection to the extent possible (para. 14.273).

prices and/or reduced quality in MVNO contracts, establishing a SLC in the wholesale mobile market.

2.2. How the transaction affects the relevant trade-offs

27. Both before and after the merger, the mobile access provider (EE or, post-merger, BT-EE) weighs the "benefits" of providing access to a MVNO at a given price (i.e. the wholesale margin it earns from the MVNO), against the implicit "cost" to itself of enabling a retail competitor to serve a downstream customer (which is the margin it could have made if it diverted that customer to itself).

28. In other words, when formulating its wholesale price bid, a MNO balances possible upstream gains against the expected retail impact on fixed-MNOs' ability to compete. The former corresponds to the probability of winning the contract, times the wholesale profit if it wins at that price; the latter corresponds to a reduction in downstream profit resulting from the MVNO gaining access at that wholesale price compared with alternative, higher-price offers (which *ex ante* should be viewed as a probability distribution). Logically, at whatever bid EE submits pre-merger, these various factors **must** be in balance – otherwise EE would submit a different bid.

29. Post-merger, however, the combination of two complementary revenue streams (by the addition of BT's fixed margin to the retail margin for each customer it captures or retains) changes this balance. The optimal trade-off between wholesale and retail profits will shift towards the latter, which will increase the attraction for the access provider to offer worse terms. In addition, knowledge of this change in the merging parties' incentives will induce the other MNOs to worsen access conditions themselves, though typically to a more limited extent.[11] This is simply the "vertical" version of the "unilateral" effects traditionally considered in horizontal mergers.

30. As in the case of unilateral effects in horizontal mergers, the size and profitability of an increase in the wholesale price will depend, among other things, on the conditions of competition in the wholesale market, e.g., on the likelihood that the price increase will result in the loss of a wholesale contract. However, the key implication of this discussion is that the most natural way to think about foreclosure issues in the first place is in terms of *raising the cost of access,* rather than withholding access altogether. Total refusal to supply is the extreme case of this scenario, in which the retail gains from raising rivals' costs are so large that the firm prefers to withhold at *any* wholesale price; this however is, by definition, a limiting case.

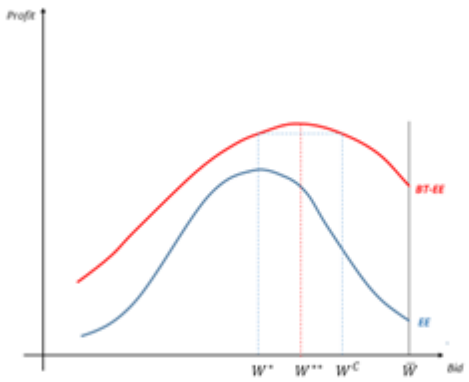
31. Finally, and even more fundamentally, the VA approach is based on *ex post* observations, which is not what *ex ante* bidding behaviour depends upon.

32. To illustrate the changes in foreclosure incentives, consider Figure 1. The blue curve represents EE's pre-merger expected profits as a function of its wholesale price (or bid), with w^* being the pre-merger optimal bid. The red curve represents BT-EE post-merger

11 This is based on the assumption that, as in standard models of price competition, the terms at which MNOs offer wholesale access are "strategic complements" (i.e., if one firm increases prices, the profit-maximizing prices of the other firms also increase, though typically by a lesser amount).

expected profits and is shifted towards the right because the merger increases the gains from raising rivals' costs.[12] This increased incentive also implies that the red curve has a positive slope at *w**. In this figure, as in the PF's conclusions, a total refusal to supply (equivalent in the figure to bidding $\overline{w} > w^c$) is less profitable than keeping the pre-merger bid. However, the optimal post-merger bid *w*** can still be higher than the pre-merger one, i.e., "partial foreclosure" can be more profitable than "total foreclosure". The VA analysis in the PFs, however, does not assess this possibility and cannot quantify the extent to which BT-EE's bids (and ultimately the MVNOs' prices) will increase.

Figure 1: Illustration of changes in foreclosure incentives



Source: CRA

33. A proper assessment of foreclosure in the present case would have thus required an evaluation of the effects of the merger on the *terms* that MVNOs are likely to be facing for access – and not just the likelihood that supply will be refused outright. The "vertical arithmetic" approach relied upon in the PFs is appropriate only for an analysis of total foreclosure (and even then it is questionable on various grounds), but it is inapt to evaluate the potential for raising rivals' costs.

2.3. The PFs are "upside down" in terms of foreclosure analysis

34. Contrary to the basic logic previously set out, the analysis reported in the PFs primarily considers "total foreclosure", while "partial foreclosure" is largely dismissed as a "dominated" strategy.[13] This approach is unsatisfactory because it takes the limiting case (no supply) as the central case; in addition, it does not properly take into account the likely reactions of other MNOs who are - or could be - access providers.

35. To put things in perspective, consider first the hypothetical case in which the input supplied by the merged entity is essential, i.e., no other MNO could provide wholesale mobile access to a MVNO. Even in this case, the integrated merged entity would still have an incentive to provide wholesale access to fixed-MVNOs, provided fixed-MVNOs expand demand to some extent, are a reasonably efficient distribution channel, and

12 The red curve is also higher because it now includes BT's profits.

13 PFs, paras. 14.191-14.194.

contracting is efficient. As described in the previous Section, it would do so at a wholesale price that optimises the trade-off between wholesale profits (which, at the overall profit-maximising solution, would benefit from lower wholesale prices) and retail profits (which would be reduced by lower wholesale prices as these intensify retail competition from the access-seekers). In other words, as discussed above, even for a wholesale *monopolist* the effect of the merger would be to change the merging parties' costs and benefits of raising rivals' costs, rather than eliminate the incentives to supply altogether.

36. In this case, EE is not a wholesale monopolist at present and BT-EE would not be a wholesale monopolist post-merger. Therefore, the merged entity's wholesale profits would be constrained by competition from other MNOs (at least from a merged O2/H3G). This means that, when bidding for an MVNO contract, the merged entity (and EE) would have to take into account the likelihood of its wholesale offer being undercut by another MNO. However, post-merger, the optimal bidding strategy would still reflect a balancing act between the expected wholesale profit that could be increased by more aggressive bidding (which would increase the probability of winning the MVNO contract), and retail profits that would be increased by less aggressive bidding (which would increase the expected wholesale price paid by the MVNO, hence weakening its impact on retail competition). As in the wholesale monopoly case, the increase in the relevant retail margins induced by the merger would result in increased incentives to raise rivals' costs, hence in less aggressive bidding and thus ultimately in higher wholesale prices or lower quality of service.

37. What this discussion highlights is that it is not enough to dismiss partial foreclosure concerns (as in the PFs) based on a partial analysis and a relative comparison with total foreclosure. A proper assessment of partial foreclosure is needed in order to properly assess whether the merger will cause a SLC in the provision of wholesale mobile services. We therefore agree with the views of the dissenting Members, who, as reported in para 14.278 of the PFs, *"considered that the merged entity would have the incentive to harm fixed-MVNOs, either by refusing to supply them, or,* ***more probably, by restricting the range and quality of services offered***" (emphasis added).

2.4. Limitations of the "vertical arithmetic" analysis in the PFs and need for a full equilibrium analysis

38. A "vertical arithmetic" ("VA") approach is frequently used as a simple tool to examine the incentives for total foreclosure in a market, as it sets up a comparison of the relative costs and benefits of supply to a rival. This approach can be informative as a first approximation in some circumstances, especially when it finds that there are incentives to refuse supply even when retail prices are kept at a fixed level. However, it is also a blunt instrument with considerable limitations, namely its inability to assess "partial foreclosure" incentives and to consider the fact that wholesale services can be supplied by other input suppliers who also act strategically.

39. The VA approach is best suited to assess the incentive to refuse supply of an essential input, i.e. the situation in which, if the integrated firm sells one fewer wholesale unit, the downstream rivals must also sell one fewer unit because it cannot source the input elsewhere. Given information on pre-merger wholesale and retail margins, the VA then identifies the critical "diversion ratio" (i.e., the fraction of rivals' lost sales that would be

captured by the integrated firm) that makes refusal to supply profitable. This critical value is then compared to estimates of the actual diversion ratio to establish whether foreclosure at pre-merger prices is profitable.[14]

40. However, wholesale access to EE's mobile network is not an essential input, as other MNOs may also provide wholesale mobile access to the fixed-MVNO. This has two consequences. First, if BT-EE were to refuse to supply, the fixed-MVNO could obtain wholesale mobile services from another MNO. Second, the other MNOs are themselves strategic players: they formulate their bids in the light of the competitive conditions they anticipate. The proposed merger fundamentally *alters* the competitive landscape against which the other MNOs formulate their offers: absent competition from BT-EE, another MNO would most likely offer access at a higher price, or worse quality, than it would have otherwise done. A critical element of the vertical effects analysis is therefore the *response* of the other MNOs to the changed incentives of the merged entity.

41. Unless the wholesale market is competitive even without the merged entity, post-merger the other wholesale access providers will offer worse conditions to fixed-MVNOs when the competitive constraint from BT-EE is known to be weaker (or, in the case of total refusal to supply, non-existent). The question is then whether the consequent increase in wholesale prices (or degradation in quality) would be large enough to make it profitable for BT-EE to be a less aggressive wholesale player post-merger.

42. The VA analysis put forward in the PFs (see Appendix I) *does not provide an answer to this question – not even, in fact, for the case of total refusal to supply*. It simply follows the approach suggested by BT's economic advisers, Compass Lexecon, which is to estimate the minimum increase in wholesale access prices (triggered by BT-EE's withdrawal from wholesale competition) that would be required to make total refusal to supply profitable (the "critical cost increase")[15], while keeping the merged entity's retail prices fixed at the pre-merger level and making various assumptions about pass-through to MVNOs' retail prices, the MVNOs' demand elasticities and their diversion ratios to the merged entity. The PFs estimate this critical cost increase to be between 85% and 240% (depending on the values of several parameters).[16] On this basis, the risk of total refusal to supply is entirely dismissed.

43. However, this analysis does not make any allowance for how competitors would change their behaviour in response to BT-EE's refusal to deal. The simplified VA framework relied upon in the PFs simply *cannot* model this question systematically: the framework is not designed to incorporate competitors' behaviour in the face of the transaction and generate an equilibrium analysis. It therefore resorts to making various *ad hoc* assumptions on different parameters to remedy this fundamental problem. The consequence, however, is that the analysis is beholden not just to the largely arbitrary assumptions that are made in regard to the values of the parameters in the VA model,

14 In general, refusal to supply will also lead to higher retail prices. This effect is not considered in a VA analysis, which therefore tends to underestimate the incentive to refuse supply.

15 Annex I, para. 3.

16 Annex I, Table 6 and Table 7.

but entirely driven by a subjective reasoning about possible future conduct. For example, the discussion of total foreclosure assumes that, because negotiations are "opaque", a MVNO could always pretend to have an attractive offer from BT-EE with which to bamboozle other potential providers into making a competitive offer.[17] Further, it assumes that Vodafone (which already appears to have become less active in the wholesale market recently) will be a willing and ready supplier post-merger.[18] Remarkably, it also does not seriously consider the possibility that, as Vodafone develops its own retail fixed offering, if it did refuse to supply fixed-MVNOs just like BT-EE, a merged O2/H3G would then become the only available provider in the UK. In such a scenario, the wholesale market would go from very competitive to monopolistic.

44. It is not enough to try to 'patch up' the inherent limitations of a VA approach with *ad hoc* assumptions. The right way to proceed is to set up a proper equilibrium analysis, in which the reactions of other access suppliers in response to the merged entity's behaviour could be taken into account.[19] This would of course be more complicated, but the consequences of errors in the assessment of foreclosure in this case are sufficiently serious to warrant such an exercise.

45. The VA approach also says nothing about the merged entity's incentives to bid less aggressively for MVNO deals and raise rivals' costs, which, as discussed, is the most natural concern arising from the proposed transaction.

46. A full assessment of the profit-maximising increase in the merged entity's wholesale prices (short of total refusal to supply) requires a more complete model of the wholesale market, which is beyond the scope of this paper. However, we note that the *CMA's VA also finds that the "critical cost increase" is much smaller post-merger than in the counterfactual.* For example, the results in Table 6 of Annex I imply that wholesale prices would have to increase by 85% for BT-EE's refusal to supply to be profitable, while they would have to increase by 478% for a stand-alone EE's refusal to supply to be profitable. This alone suggests that the merger-induced change in the incentives to raise rivals' costs is highly significant. *Therefore, even if a total refusal to supply strategy were not profitable, the "upward pricing pressure" on BT-EE's wholesale prices is likely to be considerable. Whether this "first-order" effect would actually translate into significantly higher wholesale costs for fixed-MVNOs (and hence higher prices for consumers) cannot be determined using a simple VA analysis.*

47. In the next two sections we expand further on these points and explain first, in Section 3, how the analysis of total foreclosure in the PFs is flawed *even in its own terms,* i.e. it is not a robust basis to reject total foreclosure. In Section 4, we consider the implications of the failure to consider competitors' responses.

17 PFs, para. 14.113.

18 PFs, para. 14.84.

19 Technically, in an equilibrium model the reaction of competitors to the merged parties' behaviour is endogenous (rather than being simply assumed like in a VA model) and, through calibration, some of the information contained in previous equilibrium prices and allocations is exploited to find the equilibrium solution post-merger.

3. FLAWS IN THE ASSESSMENT OF THE LIKELIHOOD OF TOTAL FORECLOSURE

48. While the PFs acknowledge that outright refusal by BT-EE to supply wholesale mobile services may lead to worse access conditions for MVNOs,[20] they also find that the effect is subject to considerable uncertainty and "*provisionally concluded that it was not more likely than not that BT-EE would have an incentive to engage in a total foreclosure strategy*."[21]

49. The conclusion that total foreclosure is "not more likely than not"[22] for BT-EE is based on several assumptions and inferences that are incorrect and undermine the reliability of the VA even for the limited task of examining the potential for total foreclosure. Moreover, because the PFs treat partial foreclosure as not much more than a less plausible variant of total foreclosure, the same errors undermine also the conclusions in the PFs on partial foreclosure.

50. There are in our view at least four major weaknesses in the PFs' analysis of foreclosure, which we discuss in greater detail in the rest of this section:

- First, the PFs put forward an incorrect picture of the wholesale access procurement process and, in particular, of MNOs' information about their rivals' participation and bidding strategies in that context (see Sections 3.1 and 3.2).
- Secondly, the PFs draw an unwarranted inference from the closeness of winning and second-placed bids in past wholesale access tenders to the likely increase in prices following a refusal to supply by the merged entity (see Section 3.3).
- Thirdly, as also pointed out by the dissenting Members,[23] the PFs do not give due weight to the fact that the merged entity's increased incentives to raise fixed-MVNOs' costs may extend to non-contractible elements of wholesale access. This may deter the fixed-MVNOs from seeking wholesale access from the merged entity and have negative repercussions on their negotiations with mobile-only MNOs (see Section 3.4).
- Fourthly, the results of the VA analysis in Annex I of the PFs rely on assumptions about some of the relevant parameters which are extreme (according to the PFs' own findings), and overestimate the level of wholesale price increases that would make a refusal to supply strategy profitable for the merged entity (see Section 3.5).

51. Finally, the PFs do not properly take into account the likely reactions of other wholesale access providers to a (total or partial) weakening of the competitive constraint now represented by BT-EE. This is discussed in Section 4.

20 PFs, para. 14.177.

21 PFs, para. 14.181.

22 PFs, para. 14.181.

23 PFs, para. 14.278.

3.1. "Credible commitment" to withdraw

52. The PFs' assessment of the merged entity's *ability* to engage in total foreclosure is based in part on the argument that, because the negotiation process for wholesale mobile access is not transparent, a statement that the merged entity intends to withdraw entirely from supplying fixed-MVNOs is unlikely to be credible.[24] In particular, the PFs consider that "*it was questionable whether a statement that the merged entity intended to withdraw entirely from supplying fixed-MVNOs would be considered entirely credible by its competitors*",[25] in which case the attempt to harm fixed-MVNO rivals through total foreclosure would fail. The credibility point is highly relevant to the question of competitor responses to any foreclosure strategy, as it affects their assessment of whether or not they would have to outbid BT-EE to win the contract.

53. In economic terms, the question of credibility is closely linked to that of incentives, and of competitors' understanding of one another's incentives. Clearly, any supplier would like to act as the PFs suggest in the second bullet of para. 14.28: "*to underplay its presence in the market whilst nevertheless entering into negotiations with some MVNOs, as this could result in a better deal than it would have achieved if it had been visibly competing.*" However, pretending not to participate when one actually has an incentive to do so is generally not credible, as competitors will correctly anticipate the incentive to take part and will adjust their own bids accordingly. The (implicit) suggestion that bidders may systematically fail to understand competitors' incentives is implausible given that the market is characterised by repeated tenders, a small number of competitors, and these competitors are sophisticated in their understanding of one another's capabilities.

54. Bidders' information can also be affected by the MVNO running the tender. During the process, the MVNO would have an incentive to let other bidders know that the merged entity is participating in order to induce them to bid more aggressively. Moreover, the MVNO may itself be unable to commit not to reveal this information, even if this were a condition for the merged entity to participate. The PFs recognise the influence of the MVNO on bidders' information,[26] but only to argue that other MNOs could be persuaded that BT-EE would participate in the tender even when this is not true. This is not a proper economic argument, as it involves assuming *ad hoc* irrationality on the part of the MNOs. From an economic point of view, only two scenarios make sense. In the first one, all MNOs correctly believe that BT-EE would not bid. In this case, total foreclosure is directly relevant and cannot be dismissed with some vague reference to the lack of transparency of the bidding process. In the second scenario, all MNOs assume correctly that BT-EE would bid. In this case, partial foreclosure is also relevant.

55. The argument about BT-EE's inability to commit not to bid post-merger is particularly weak in view of the PFs' rejection of partial foreclosure on the basis that the merged entity could cause more harm to MVNOs with total foreclosure, and accordingly would prefer to adopt the latter. The PFs claim that partial foreclosure is in effect dominated

24 PFs, paras. 14.24-14.29.

25 PFs, para. 14.28.

26 PFs, para. 14.113.

by total foreclosure, but then argue against the possibility of total foreclosure because BT-EE cannot credibly commit to it. Surely, if the commitment point is examined with due attention, then a proper analysis of partial foreclosure is even more necessary.

3.2. Uncertainty over bids submitted by rival MNOs

56. The PFs' analysis of the merged entity's ability and incentive to withdraw from the wholesale market appears to be based on an unrealistic picture of the bidding situation, which also contradicts other statements in the PFs. In their discussion of credible commitment to withdraw, examined in Section 3.1, the PFs appear to assume that BT-EE knows, or has a good idea, that a rival MNO (e.g. Telefónica) would be willing to supply a fixed-MVNO (e.g. Sky) at a particular wholesale price *w* (where this incorporates a positive wholesale margin). With such knowledge, BT-EE would then have an incentive to undercut *w* by a tiny amount to obtain the wholesale contract while making only a minimal difference to Sky's competitiveness in the retail market.

57. This assumption would be correct if BT-EE knew what price Telefónica was offering. However, more realistically – especially given the "opaque nature"[27] of negotiations discussed in the PFs – when making a wholesale offer BT-EE does not know the bids of other MNOs. As a consequence, the probability of winning the contract is a decreasing function of the level of its bid. Moreover, if BT-EE submits a bid at a lower wholesale price then it runs a greater risk that it is actually giving Sky the input at a significantly lower price than Sky would have obtained otherwise (because the other MNOs' wholesale offers are much higher), therefore the impact on Sky's competitiveness could be quite significant.

58. As explained earlier in this document, offering a lower wholesale price becomes a balancing act between these various incentives: a higher chance of winning the contract, but at a lower wholesale margin (the standard trade-off facing an upstream supplier with no retail arm), and a greater risk of making (for example) Sky a significantly more competitive downstream player than it would have been if it had accepted the second-best wholesale offer from another MNO, thus increasing the loss of downstream revenues and the corresponding retail margins (the additional consideration facing an integrated supplier). Any conclusion on foreclosure that ignores that bids are determined on the basis of this balancing is incorrect and cannot be relied upon.

3.3. Unwarranted inferences from observed bids

59. The PFs' observation that "*the price variation between the winning and second-placed bids [in tendering for wholesale mobile contracts] was therefore as small as 5%*"[28] tells us very little about the likely effects of the merger. Even if, pre-merger, the observed difference between the two top bids for the same contract is small, this does not imply that removing a bidder would not increase price significantly. For example, in an ascending (or second-price) auction, the price difference between the winner and the second-lowest bidder is clearly very small, because the winner only needs to outbid the second-lowest bid by the minimum bid increment. If EE were to stop bidding when it

27 PFs, para. 14.28.

28 PFs, para. 14.109.

would have been the lowest or second-lowest bidder, then prices would rise to the third-lowest valuation among bidders, which could be considerably higher than the second-lowest valuation (i.e., than the price under full participation) regardless of how small the difference was between the latter and the original winner's valuation. Given this, the estimate of price variations provided in the PFs may be significantly biased downwards.

60. A similar argument applies if we assume that competition for the supply of wholesale mobile services to MVNOs is best approximated as a sealed-bid first-price auction. In order to frame the argument as close to the PFs' approach as possible, suppose (for the sake of the argument only) that all bidders are the same *ex ante*, i.e. every MNO's beliefs about other MNOs' valuations of supplying access to the MVNO are represented by an identical and independent probability distribution. Assume further that, in the specific case under consideration and unbeknownst to them, all MNOs have the same valuation for the contract and thus submit exactly the same bid. Now suppose one of the bidders withdraws from the tender. As we proceed to show, this leads all remaining bidders to bid less aggressively for all possible values of their valuation distributions.

61. Suppose that the number of bidding MNOs was three pre-merger and becomes two post-merger. In order to win the auction before the merger, an MNO would have to bid below the best "draw" out of three; by contrast, post-merger, it would have to outbid only the best draw out of two, meaning that post-merger a higher bid has a higher likelihood of winning. Even if the (remaining) MNOs have exactly the same valuations before and after the merger, the price of access would still increase, and it could do so by a considerable amount. The same logic applies even in the case in which BT-EE continues to bid post-merger, as long as the other MNOs anticipate that BT-EE now has an incentive to bid less aggressively. Accordingly, there is no necessary relationship between the bid differences observed before the merger and the likely effect of the merger on future bids.

62. We therefore entirely agree with the dissenting Members that it is unlikely that the risk of foreclosure "*would be neutralised by the other three MNOs offering better terms*", and that a more realistic outcome is that "*EE's total or partial withdrawal from the supply of wholesale mobile access would lead to higher prices and/or reduced quality in MVNO contracts*".[29]

3.4. Reluctance to deal with fixed-MNOs

63. The dissenting Members highlight another factor that is quickly dismissed in the PFs:[30] *"[t]he MVNOs, for their part, would be reluctant to risk their long term security of supply by being hosted by their main rival in mobile and fixed telecom markets."*[31] MVNOs may have to make significant investments that are specific to the network of the MNO providing them wholesale access. The merged entity would have the ability and an increased incentive to "hold-up" a fixed-MVNO which it hosts by threatening not to renew the agreement. It would also have an increased incentive to lower any aspect of

29 PFs, para. 14.279.

30 PFs. Para. 14.268.

31 PFs, para. 14.278.

service quality that cannot be contracted upon. These higher risks of hold-up and sabotage would make it more costly for the fixed-MVNO to use the merged entity's wholesale services, perhaps even to the point where the fixed-MVNO would not consider the merged entity as an acceptable access provider. In this case, any wholesale price offer from the merged entity becomes irrelevant, as it would not be accepted even if it were lower than all competing offers. Moreover, since the other MNOs would be aware of this reduced competitive threat from the merged entity, they would also offer the fixed-MVNO worse access conditions.

64. The analysis provided in the PFs dismisses this risk without sufficient evidence. In our view, this concern should be re-assessed alongside the partial foreclosure strategy of degrading the quality of wholesale mobile services provided *after* a contract is signed,[32] which also appears to have been dismissed too quickly in the PFs.

3.5. The VA results are based on extreme assumptions about demand elasticities and pass-through rates

65. The VA analysis of total foreclosure incentives in Annex I of the PFs culminates with the calculation of critical wholesale price increases in the post-merger, counterfactual, and pre-merger scenarios for two sets of parameter values. The results of this analysis are shown in Table 6 and Table 7 of Annex I. These differ in the underlying assumptions about the percentage of MVNO customers buying bundles, the percentage of customers that would "unbundle" (i.e. buy fixed and mobile services from different providers) when induced to change their purchase choice following a price increase, and the merged entity's "recapture rate" for those customers. These parametric assumptions are all in the direction of lower critical price increases for Table 6, and higher ones for Table 7.

66. However, both sets of results assume that:

- The absolute value of the price-elasticity of demand for both mobile-only and fixed-mobile bundles is 2.5; and
- The MVNOs' pass-through rate of wholesale costs to retail prices is 50%.

67. […].[33]

68. Using other estimates that are also considered "reasonable" in the PFs, the resulting critical cost increases would be dramatically lower. For example, assuming a demand elasticity of […] and a pass-through rate of […] would reduce the critical costs increases by a factor of $[...] = 36\%$ approximately: the critical cost increase in Table 6 would decrease from 85% to 30%, and the one in Table 7 from 240% to 86%. These values no longer even "appear" as implausible as the PFs' dismissal of "total foreclosure" concerns implicitly assumes.

32 This concern is considered in paras. 14.266-14.275 of the PFs in the context of the analysis of foreclosure within the terms of future contracts

33 Annex I, paras. 17 and 51.

4. NEED TO TAKE PROPERLY INTO ACCOUNT CHANGES IN COMPETITORS' RESPONSES

69. Key to the assessment of the likelihood of foreclosure, and its impact on wholesale prices, is the consideration that the merger will change not only the conduct of the parties but also that of other MNOs – i.e. the dynamics of wholesale competition. The PFs do not address this issue on the basis of a well-specified model, but rely instead on subjective reasoning on the likely conduct of others. This approach is flawed in various respects.

70. First, as already mentioned at several points in Section 3, any weakening in the merged entity's incentives to bid for a MVNO contract will induce *other MNOs* to bid less aggressively for that contract – and the weaker the competition among those other MNOs, the stronger this effect. While the PFs recognise this fact,[34] they do not then take it into account in the analysis.

71. Secondly, the PFs do not give due consideration to the fact that not just the merged entity, but also Vodafone, would be operating both mobile and fixed networks. This has implications not only for Vodafone's incentives to provide access to fixed-MVNOs (and for how these incentives are affected by the merger), but also for the merged entity's incentives to compete with Vodafone in the wholesale mobile market.

72. Finally, the PFs overestimate the likely level of wholesale market competition between the two mobile-only MNOs (Telefónica and H3G), even leaving aside the fact they also are in the process of merging – and therefore the counterfactual cannot just be that they remain as independent suppliers of MVNO access.

4.1. Importance of competitor responses

73. In paragraph 14.19 the PFs state that:

> *"This ability* [to pursue a total foreclosure strategy and worsen the terms obtained by fixed-MVNOs] *could arise either because EE previously made the best offer, or because in a scenario where EE did not bid other wholesalers recognised that competition was weaker and degraded their wholesale offers accordingly."*

74. While this statement appears to accept the possibility that rivals might alter their own behaviour in response to a foreclosure strategy by BT-EE, the analysis reported in the PFs (including the VA in Appendix I) fails to assess likely competitor responses.

75. To see that this is key, recall the auction set-up of Section 3.3. If one was to think of the negotiation process as an ascending auction (or equivalently, for the purpose of this discussion, as a sealed-bid second-price auction), then it is plausible that the merger would not change the bidding strategy of other potential suppliers because, in that set-up, it is as if all bidders bid their valuations. However, as discussed before, the merger would still affect the price paid by MVNOs through two possible mechanisms: (i) by inducing BT-EE not to take part in the bidding for a contract where it would have been

34 PFs, para 14.19.

the lowest or second-lowest bidder; *or* (ii) by inducing BT-EE to bid less aggressively than EE would have done in cases where doing so would increase the second-lowest bid in the auction.

76. The impact of changes in the merged entity's incentive is even clearer if we assume that the tender process is best approximated instead as a sealed-bid first-price auction. Indeed, if one accepts the view expressed in the PFs that the bidding process is so opaque that BT-EE's participation would be unknown to other bidders,[35] then such an auction format is a better representation of reality than an ascending auction, in which all bidders need to observe and verify the highest bids entered by rivals. As discussed before, in a sealed-bid first-price auction, the behaviour of each bidder is affected by its expectation about the bidding behaviour of others. In this case, the very fact that rivals know that BT-EE has an incentive to offer less favourable deals than EE did before the merger leads the other potential suppliers of wholesale mobile access to bid less aggressively as they are less likely to be underbid.[36]

4.2. Impact of the merger on wholesale competition

77. The PFs note in places that, post-merger, other wholesalers might recognise that competition is weaker and degrade their offers. However the discussion in paras. 14.30-14.106 provides little substantial analysis of how integration between fixed and mobile networks affects incentives to compete to offer wholesale mobile services to downstream competitors with fixed (but not mobile) operations.

78. To date, and since its acquisition of Cable & Wireless in 2012, Vodafone is the only MNO that also operates a (limited) fixed network and it has recently started to offer fixed-mobile bundled products. Following BT's acquisition of EE, there will be thus two integrated fixed-mobile operators in the UK (with BT-EE having much bigger scale than Vodafone). The assessment of the impact of the merger on competition for the supply of MVNO access in this situation should consider two elements:

- What incentive does another fixed-MNO have to compete with the merged BT-EE to offer a MVNO contract to a fixed-MVNO?
- If competition between fixed-MNOs is weak, will competition from mobile-only MNOs be sufficient to prevent fixed-MVNOs from being disadvantaged?

79. Below we discuss these two elements in turn.

4.2.1. Competition between fixed-MNOs weakens competition in the wholesale market and increases the merger effects

80. As we have already discussed, ownership of a fixed-line business affects the vertical arithmetic of foreclosure incentives for a MNO because the opportunity cost of supplying

35 PFs, para. 13.43.

36 The contrast between first-price and second-price auction formats in the text should not be taken to imply that the overall price effect of the merger would necessarily be higher in the case of the former, since a "revenue equivalence" result may still hold. In both cases the merger would still have a price effect even when EE's (pre-merger) bid would not have been the best offer and when BT-EE (post-merger) would still participate in the bidding.

a fixed-MVNO (for a given wholesale price) increases, as the diversion of retail customers to the fixed-MVNO post-merger includes some fixed-line revenues as well as mobile revenues. This consideration, which will also increasingly affect Vodafone's assessment of the profitability of offering MVNO deals, will also affect, post-merger, the willingness of the merged entity to supply fixed-MVNOs.

81. The effect described above exists even if there is only one fixed-MNO in the market. However, a second effect arises when there is more than one fixed-MNO. When Vodafone supplies a fixed-MVNO – for example TalkTalk (which it supplied until recently) – its own retail pricing behaviour is softened. This effect (which would be stronger in the market segments where TalkTalk is stronger, at least to the extent these can be identified and targeted) is due to the fact that winning retail subscribers from TalkTalk forgoes some wholesale revenues that Vodafone would otherwise have earned from TalkTalk. In particular, in the absence of the TalkTalk MVNO contract Vodafone would price its fixed-mobile retail offer more keenly (at least in market segments served by TalkTalk), because the trade-off would disappear.

82. Currently, when considering what kind of MVNO deal to offer to TalkTalk, EE takes no account of the implications of winning the deal on Vodafone's pricing of fixed services; if mobile-only and fixed-mobile bundles are not close enough substitutes for the relevant customers, any resulting change in Vodafone's bundle prices is unimportant to EE. By contrast, the retail pricing of bundles becomes very important to the combined BT-EE entity. Recognising that Vodafone will become more aggressive in the downstream market if it loses the MVNO contract with TalkTalk (because the cannibalisation of wholesale revenues through retail sales disappears), BT-EE has a reduced incentive to displace Vodafone as supplier of wholesale mobile services to TalkTalk. The same effect occurs vice versa between Vodafone and BT-EE. Thus, *the fact that wholesale MVNO deals soften the host MNO's retail pricing of fixed-mobile bundles results in a softening of competition between fixed-MNOs to supply wholesale mobile access to fixed-MVNOs.*

4.2.2. Competition from mobile-only MNOs

83. Of course, if there were plenty of potential MNO hosts with no fixed operations of their own, then the softening effect discussed in the previous sub-section would be unimportant: post-merger one of the mobile-only MNOs would supply the fixed-MVNOs at competitive prices. In the case under consideration, however, there would be only two such MNOs left after the merger (Telefónica and H3G) and these are also in the process of merging.

84. We note that para. 14.114 of the PFs indeed notes that not all MNOs provided a significant constraint in recent tenders:

> *"we considered that, pre-merger, [...] Telefónica, Vodafone and H3G were also competing in wholesale mobile, but Vodafone and H3G had been less successful in recent bids".*

85. One interpretation of this observation might be that H3G is capacity constrained and cannot compete effectively for a significant share of MVNO business, while, as noted above, Vodafone's incentive to offer attractive MVNO deals has recently been weakened by its decision to launch its own fixed services. This only leaves Telefónica as a credible provider of MVNO access after the BT-EE transaction (even without

considering the proposed merger between Telefónica and H3G).[37] This situation is unlikely to prevent increases in prices for wholesale mobile services to fixed-MVNOs following the merger.

86. However, for the sake of argument suppose that (contrary to the suggestions above) H3G is and will remain an effective competitor in the supply of wholesale mobile services, and that the O2/H3G merger is blocked. The PFs argue that the effect of the merger on the conditions of access to MNO networks would be modest, and that the two mobile-only MNOs (Telefónica and H3G) would still have incentives post-merger to offer competitive wholesale prices to fixed-MVNO customers to enable them to compete in the provision of fixed-mobile bundles. This claim is unconvincing, and the discussion of the panel's opinions in para. 14.279 suggests that some of the CMA Members recognise this flaw.

87. What matters is how the terms offered by the mobile-only MNOs would be affected by the merger. Even if fixed-mobile bundles became prevalent and this made mobile-only MNOs eager to have a presence in the supply of fixed-mobile bundles, they are nonetheless driven by their own profit motive and hence are also eager to extract the largest possible share of the benefits from their presence in fixed-mobile bundles and leave little surplus to the MVNOs which they host. Absent the merger, competition from other access providers – including EE – prevents them from obtaining most of this surplus. The removal or weakening of this constraint through the merger must therefore have an effect on the access terms offered, regardless of the (unchanged) eagerness of the mobile-only MNOs to be present in the bundle segment. Moreover, the competitive constraint imposed by EE absent the merger would also be substantial since, following the very argument presented in the PFs, it too (as a mobile-only MNO) would be eager to achieve a mobile-fixed presence.

88. The only context where the PFs' argument could reasonably apply is one where competition between the (few) remaining mobile-only MNOs to provide access to MVNOs would be so fierce as to make the total number of suppliers barely relevant as long as there are at least two of them, as, say, in a homogenous Bertrand oligopoly.

89. Paragraph 14.82 of the PFs, commenting on the potential withdrawal by both BT-EE and Vodafone from bidding for access contracts with fixed-MVNOs, states:

> *"we consider that the continued role of Telefónica and H3G post-merger, with strong incentives to bid for fixed-MVNO contracts, would be likely to undermine such a strategy."*

90. This statement implicitly relies on the very extreme assumption described above – that only two suppliers suffice for a competitive outcome to be achieved. This, however, cannot simply be stated without providing substantial evidence.

37 Note that even Telefónica may soon face capacity constraints following the growth in consumer demand for data. While Telefónica may be able to buy additional spectrum in the forthcoming auction, this spectrum is worth significantly less than the high-frequency spectrum held by BT and Vodafone (who would also be able to bid in the upcoming auction without being subject to any spectrum caps) since far fewer devices are able to use it. It is therefore unclear to what extent Telefónica would be technically able to offer the same capacity for wholesale access to high-frequency spectrum (see paras. 14.49-14.61).

91. Finally, if all MNOs set up their own fixed operations (e.g., partnering up with one of the fixed-line providers such as Virgin Media, Sky or TalkTalk), then it could be increasingly difficult for the other fixed-MVNOs to procure wholesale mobile access at competitive prices. The consequent reduction in retail competition would not necessarily be compensated for by the increase in the number of integrated fixed-MNOs.

92. Overall, the above reinforces the view expressed by the dissenting Members that the risk of foreclosure would not be neutralised (and potentially, in our view, not even mitigated) "*by the remaining MNOs offering better terms, either out of a desire to play a part in fixed-mobile bundling or in any event.*"[38]

5. CONCLUSIONS

93. The PFs report that two Members of the panel disagree with the conclusion that the proposed transaction would not lead to an SLC in the provision of wholesale mobile access services. This appears to be on grounds that: (a) there is a significant probability that the merged entity would have the incentive to engage in partial foreclosure and harm fixed-MVNOs, rather than refuse to grant them access altogether; and (b) any foreclosure strategy, either partial or total, would materially affect competition in the wholesale mobile market, with the remaining MNOs unable or unwilling to neutralise the impact of the merger. Prices for wholesale mobile services would therefore likely increase (and/or quality of service decrease) with adverse effects on retail prices to consumers.

94. We find the concerns of the dissenting Members well-grounded as a matter of logic and economic analysis.

95. First, we agree with the dissenting Members that partial foreclosure is the most natural concern associated with the present transaction. By aggregating BT's fixed revenues downstream with EE's mobile revenues, the merger changes the relative cost and benefit of restricting supply to fixed-MVNOs that will compete with BT-EE to serve customers interested in joint purchasing of fixed and mobile services. This suggests that the first concern to be examined is the extent to which the transaction creates incentives to *raise rivals' costs* (by increasing the price or worsening the quality of service offered), with total refusal to supply the limiting case. The PFs major instead on the limiting case as the central case, and treat partial foreclosure as a secondary variant of this concern. They then dispose of it through partial reasoning, but do not recognise that the "upward pricing pressure" on BT-EE's wholesale prices could be considerable even if total refusal to supply were not profitable.

96. Secondly, the analysis of total foreclosure in the PFs, which is framed in terms of vertical arithmetic, is incorrect on its own terms and deficient in various respects. The analysis relies on multiple assumptions and inferences which do not reflect the reality of the circumstances of the present transaction, including the way negotiations between a MVNO and a host work, the rationality of participants, and the functioning of bidding/ auction markets.

38 PFs, para. 14.279.

97. Thirdly, the analysis in the PFs fails fully to take into account the reaction of other MNOs to the merged entity's behaviour, and therefore fails to properly address the concern, expressed by the dissenting Members, that other access suppliers would be unable to neutralise (and, in our view, even mitigate) the detrimental effects of the merger on downstream competition. A vertical arithmetic approach cannot model competitor reactions to the merged entity's change in incentives, and the analysis in the PFs is thus entirely beholden to largely arbitrary assumptions made on different parameters about competitors.

98. The PFs should not have entrusted the analysis entirely to a VA approach whose limitations are well known and cannot be overcome with a few patches. It should have adopted instead a full equilibrium analysis, which is more demanding analytically but capable of providing less obviously flawed insights into the way the merger should be expected to affect equilibrium behaviour in the wholesale market.

99. We thus concur entirely with the concerns expressed by the dissenting Members and urge the CMA to re-assess its theory of harm on the impact of the merger on wholesale mobile competition.